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Barcelona Supercomputing Center
Centro Nacional de Supercomputación

EXCELENCIA SEVERO OCHOA

Opportunities for seasonal forecasting application in fisheries

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PREFACE: "*Combining European and African expertise in observations, modelling, and marine ecosystems to improve our understanding and capabilities to predict Tropical Atlantic climate and its impacts.*"

- to provide more accurate quantification of climate change impacts on oceans, marine ecosystems and services in the Tropical Atlantic.

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- to provide more accurate quantification of climate change impacts on oceans, marine ecosystems and services in the Tropical Atlantic. ⟶ Share seasonal climate information with the fishery community.

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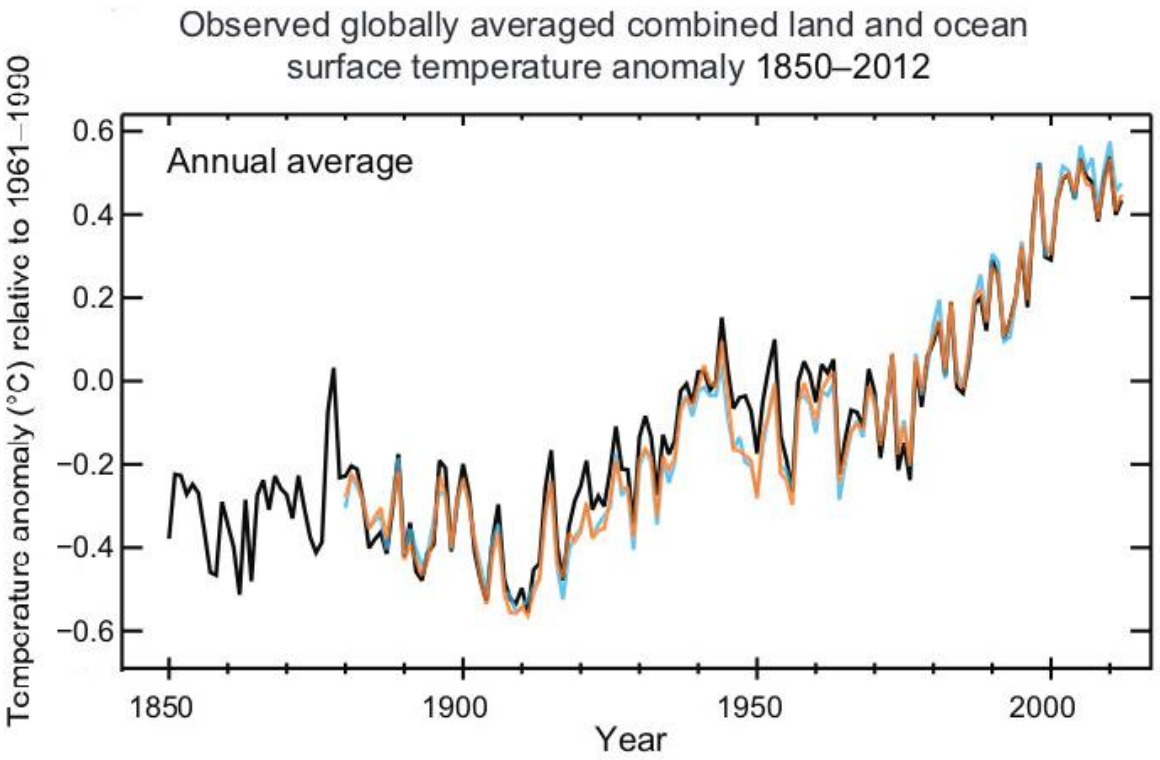
Outline:

- Climate change and biological and socio-economical impacts
- Seasonal climate information for adaptation to climate change
- BSC seasonal climate predictions
- The PISCES biogeochemical model
- Your feedback: how can we interact?

Climate change



IPCC 2013,Summary for Policymakers: http://ar5-syr.ipcc.ch/resources/htmlpdf/WG1AR5_SPM_FINAL/#pf4

Climate change:

↑ Temperature

↑ Carbon Dioxide

△Precipitation

How will climate evolve in the future?
What is the cause of the evolution?

↑↓ Increase/decrease △ change

Impacts of climate change

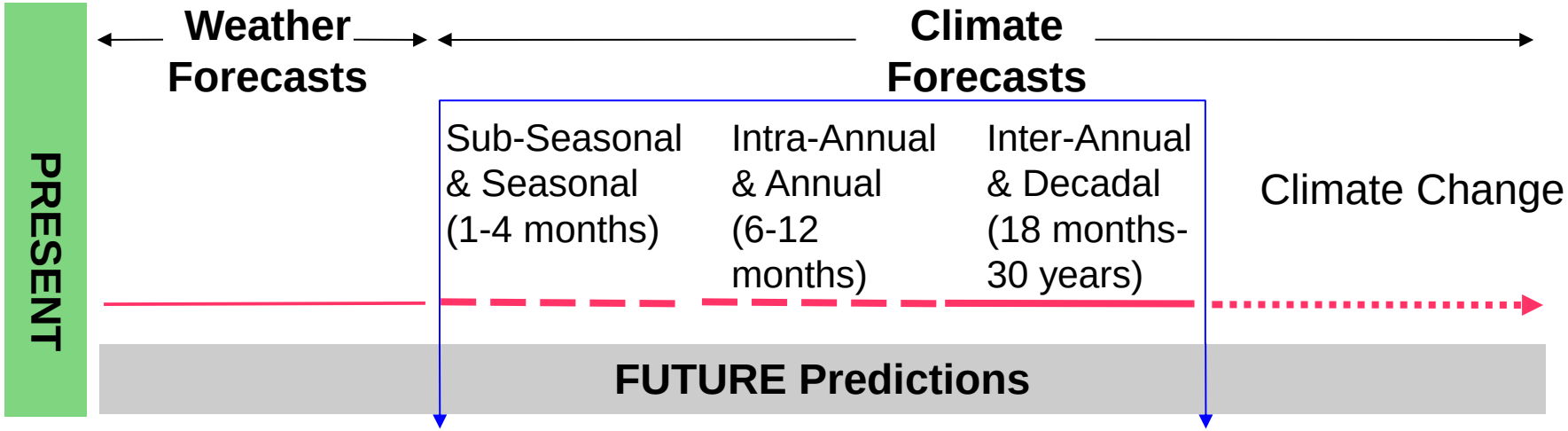
Physical and chemical impacts	Biological impacts	Social Economical Impacts
↑ Ocean Temperature	△ Productivity	△ Fishing
△ Sea Ice	△ Species Distribution	△ Industries
↑ Sea level	△ Species Abundance	△ Subsistence use
↓ Oxygen	△ Community Composition	△ Community Health
△ Fresh Water		Risk of community conflicts
↑ Ocean Acidification		

↑↓ Increase/decrease

△ Change

Adapted from http://www.gfdl.noaa.gov/marine-resource-management-workshop

Seasonal information for adaptation



How can a forecast <u>benefit</u> the decision making processes?

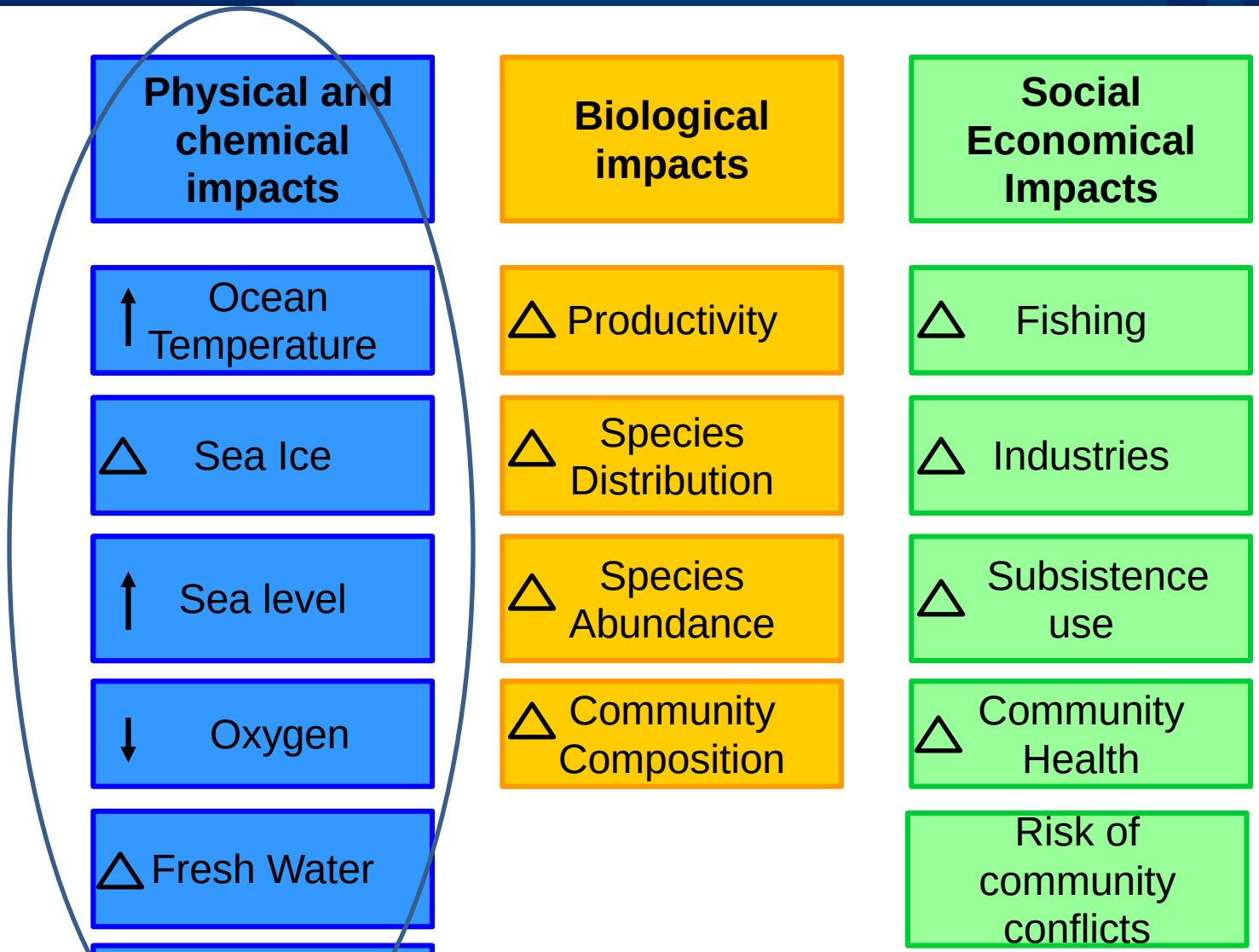
Giving information in advance.

Ability to make decisions earlier.

Take calculated precautionary action.

Potential cost saving.

Prediction of the impacts



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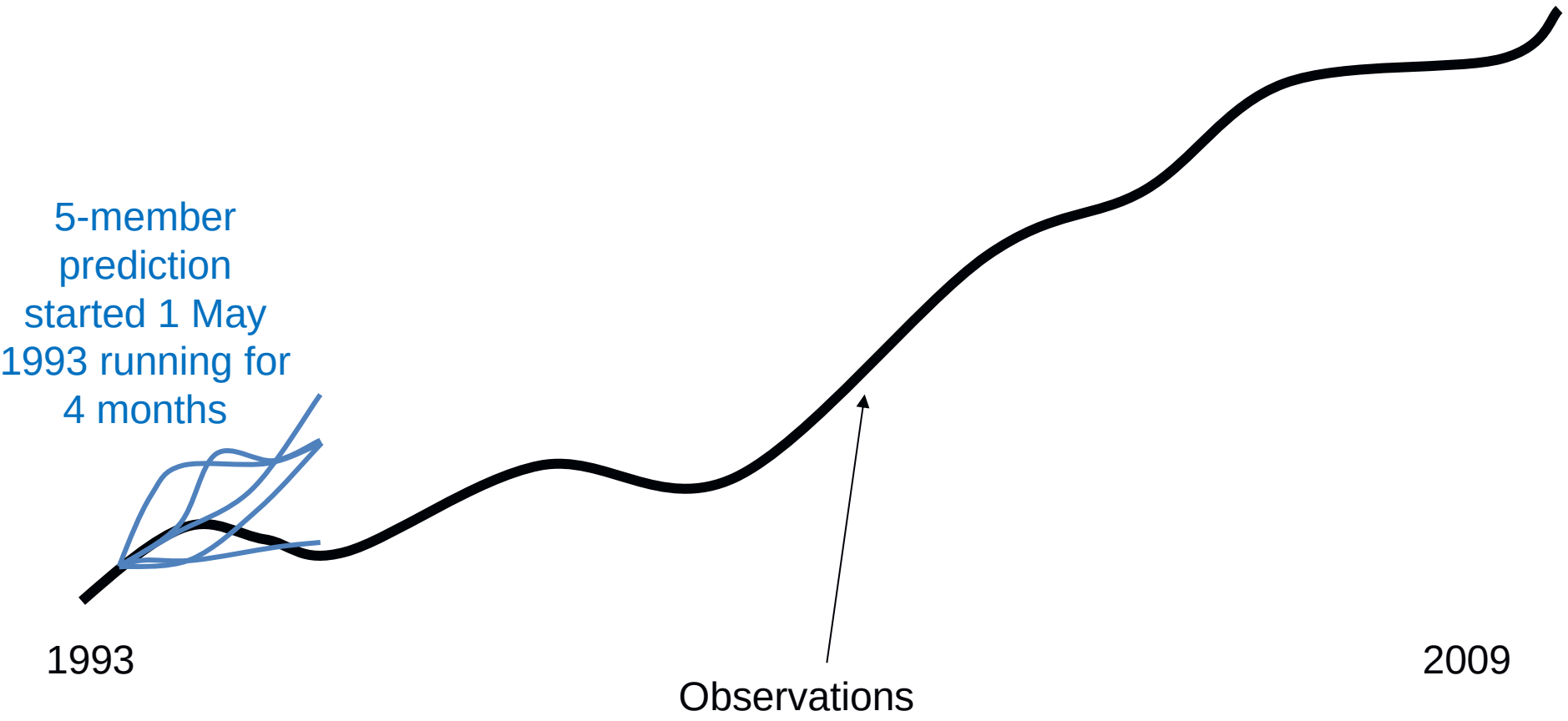
Seasonal climate prediction experiments



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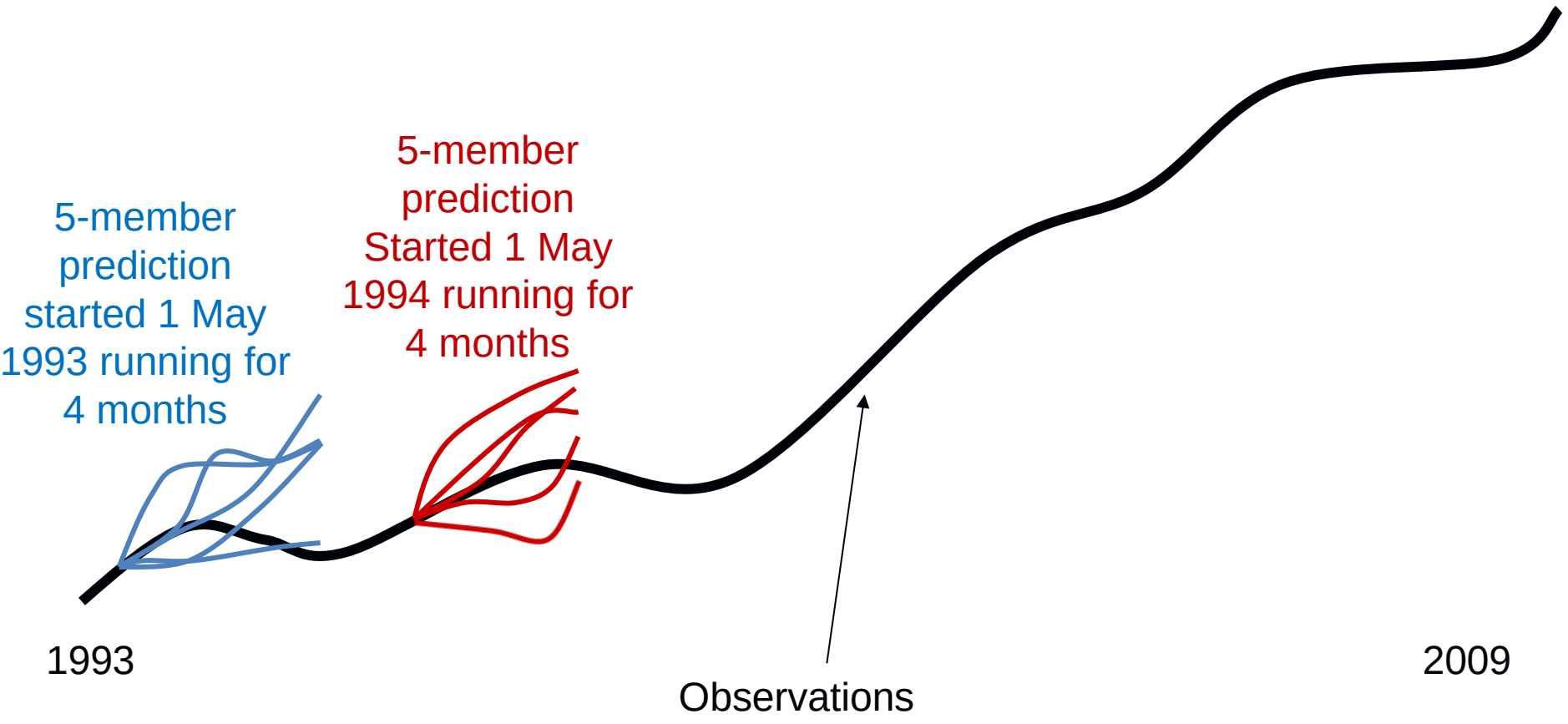

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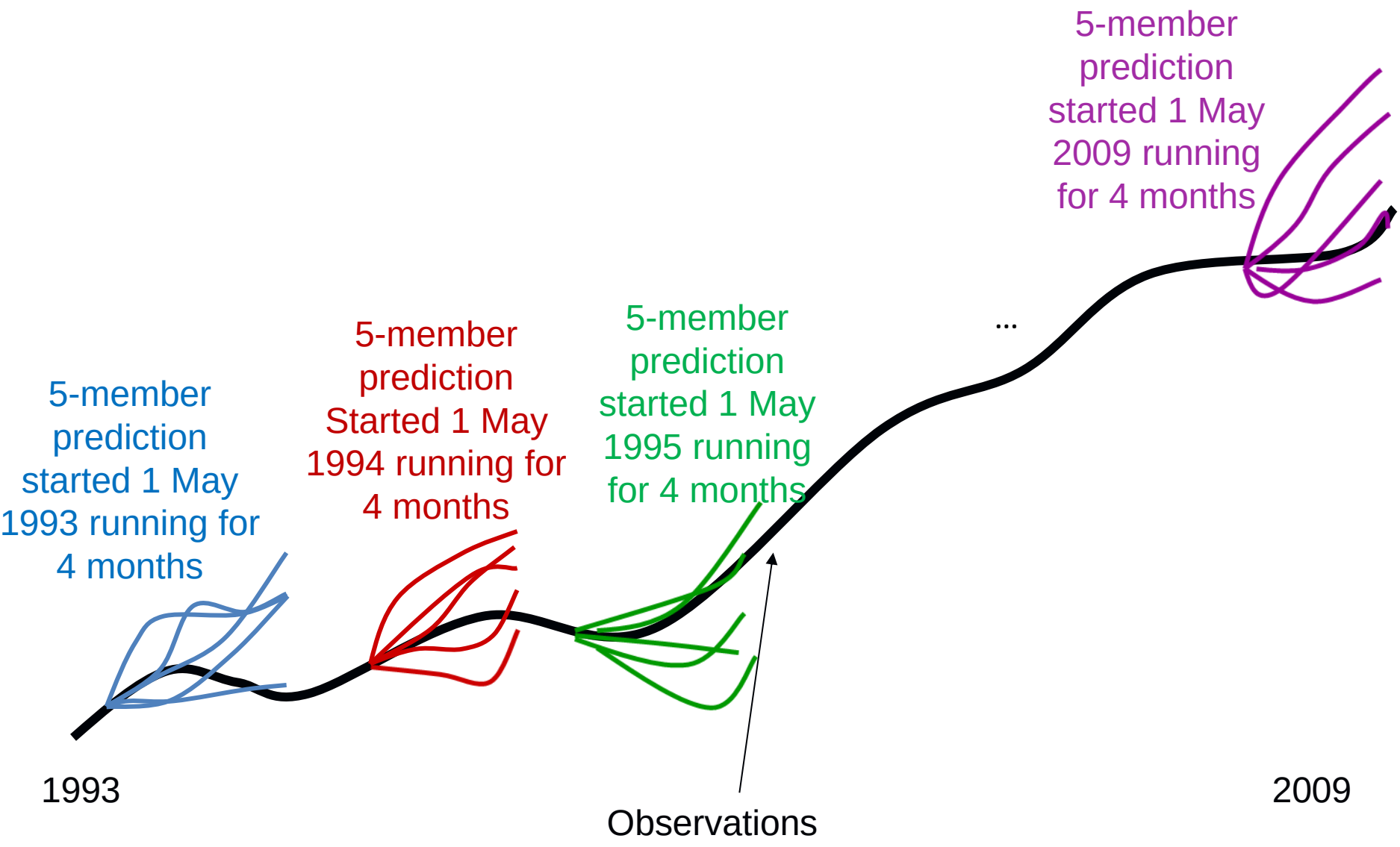

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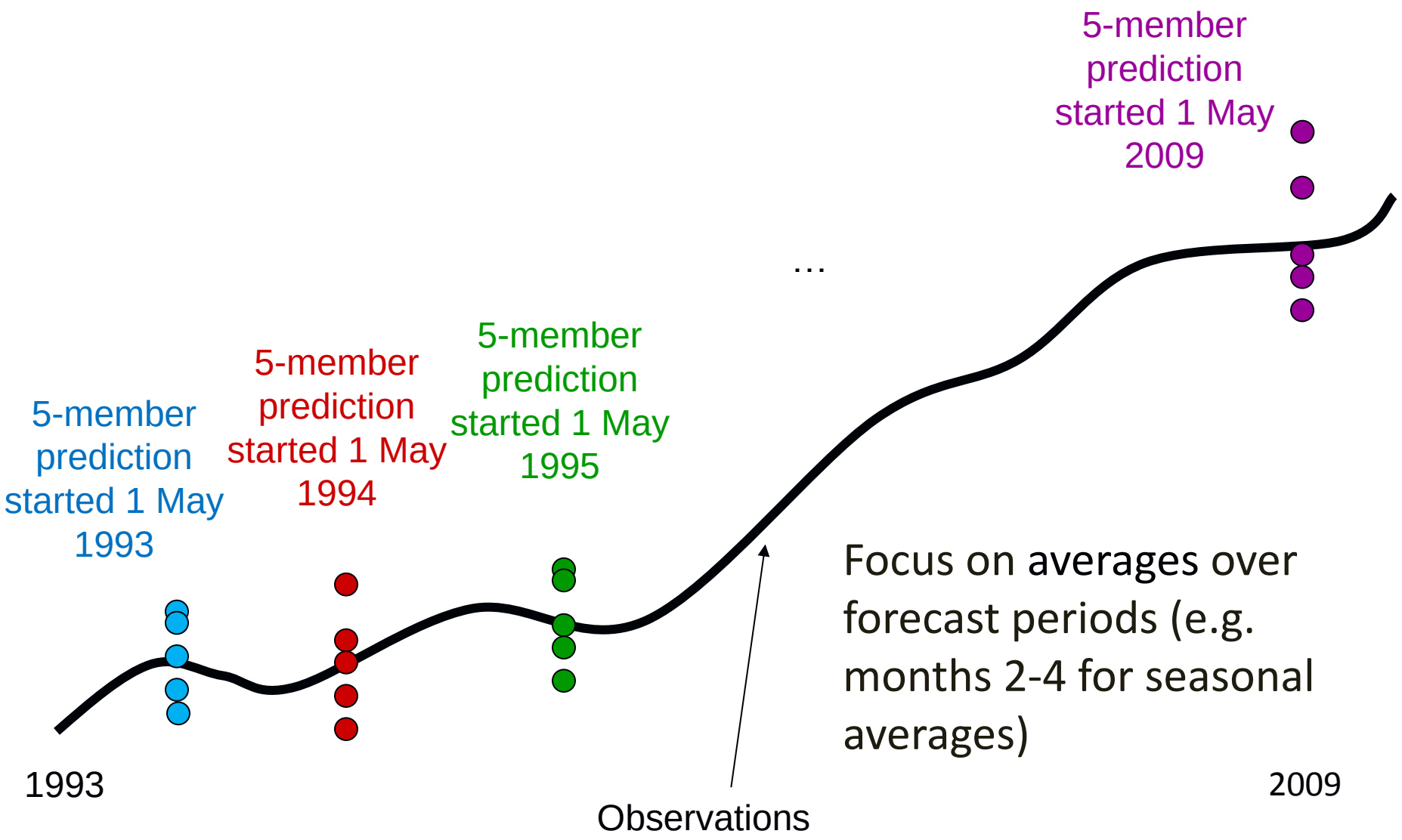
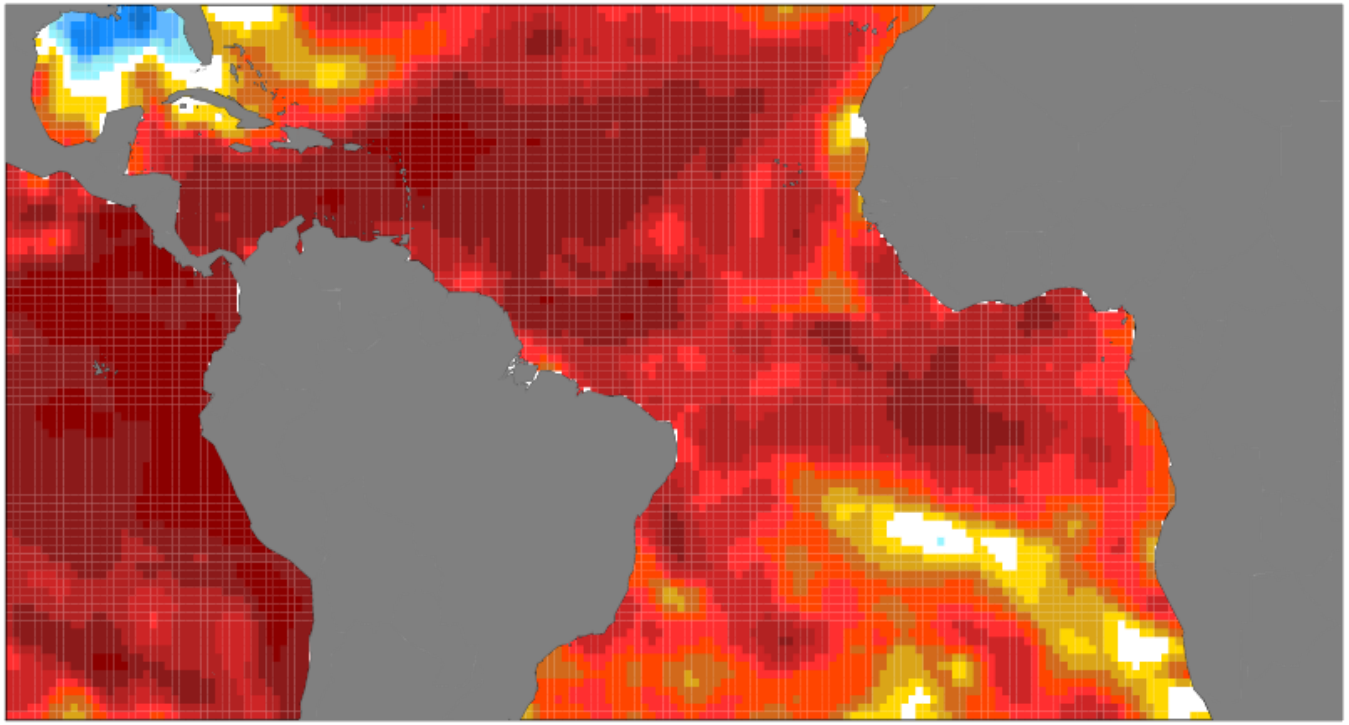
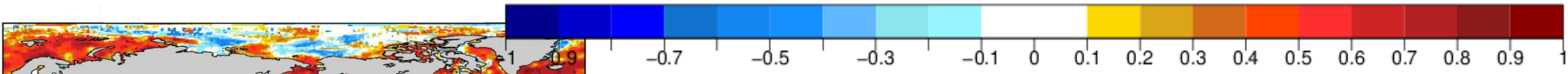
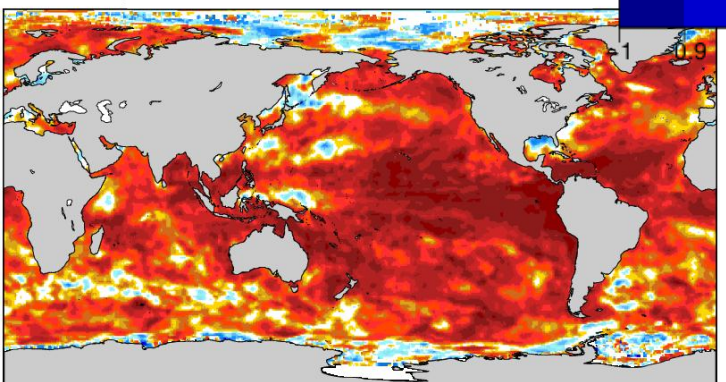


Example of seasonal skill of EC-Earth

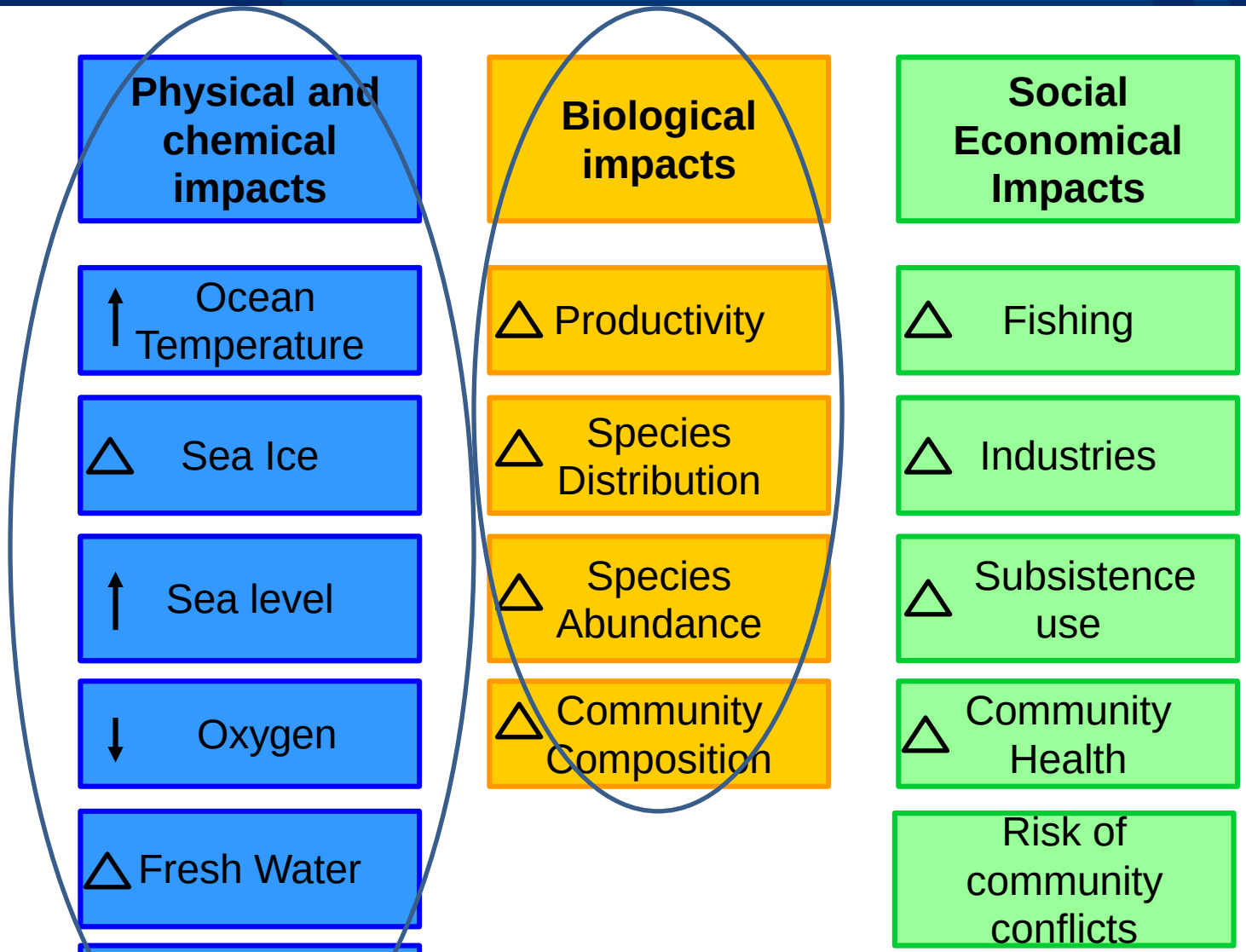
SST correlation with HadISST data for JJA with 1 month lead







Prediction of the impacts



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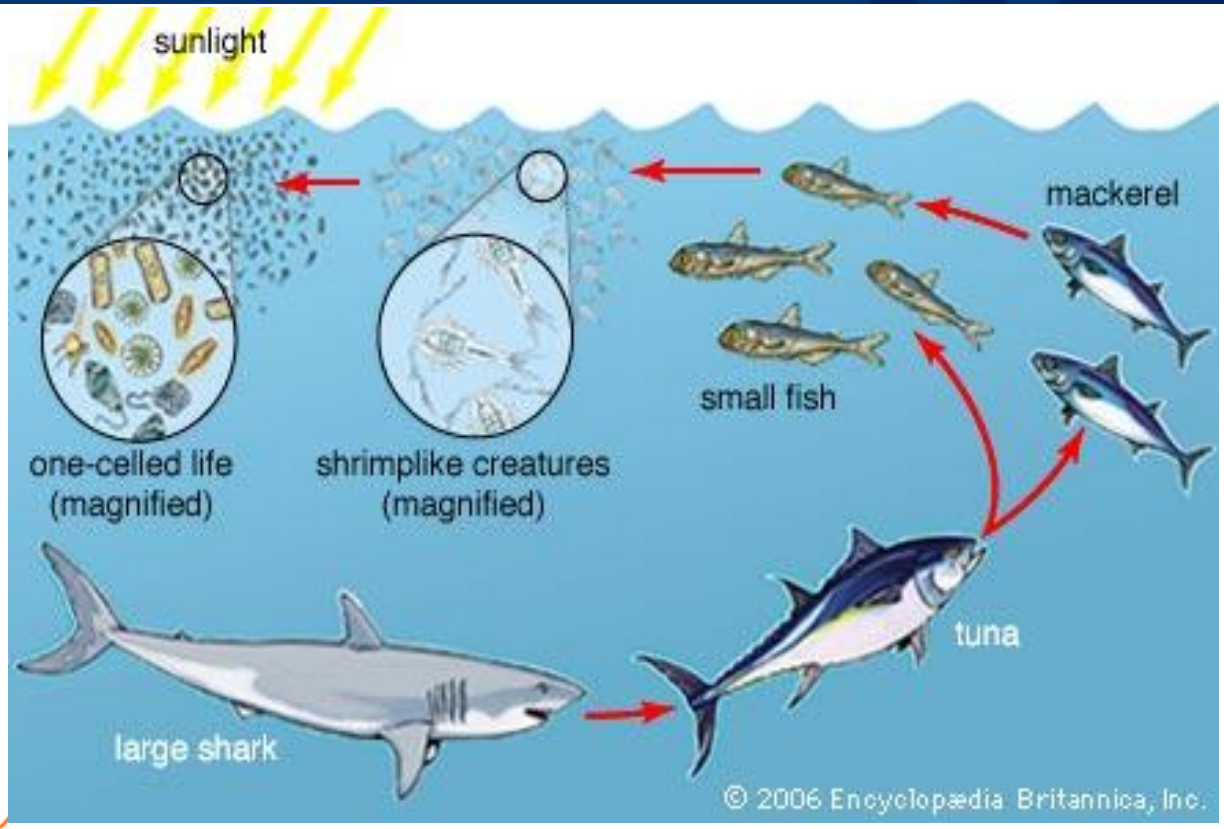
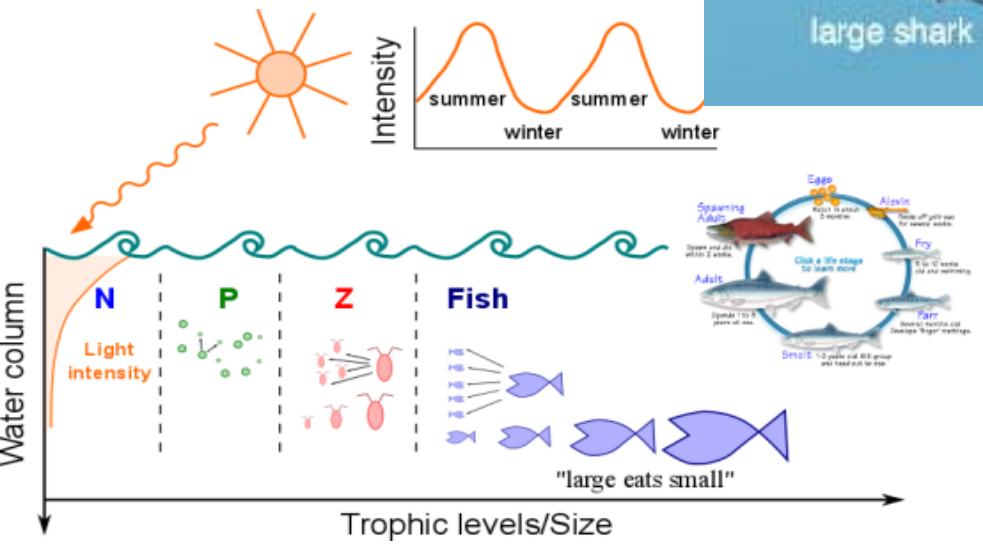
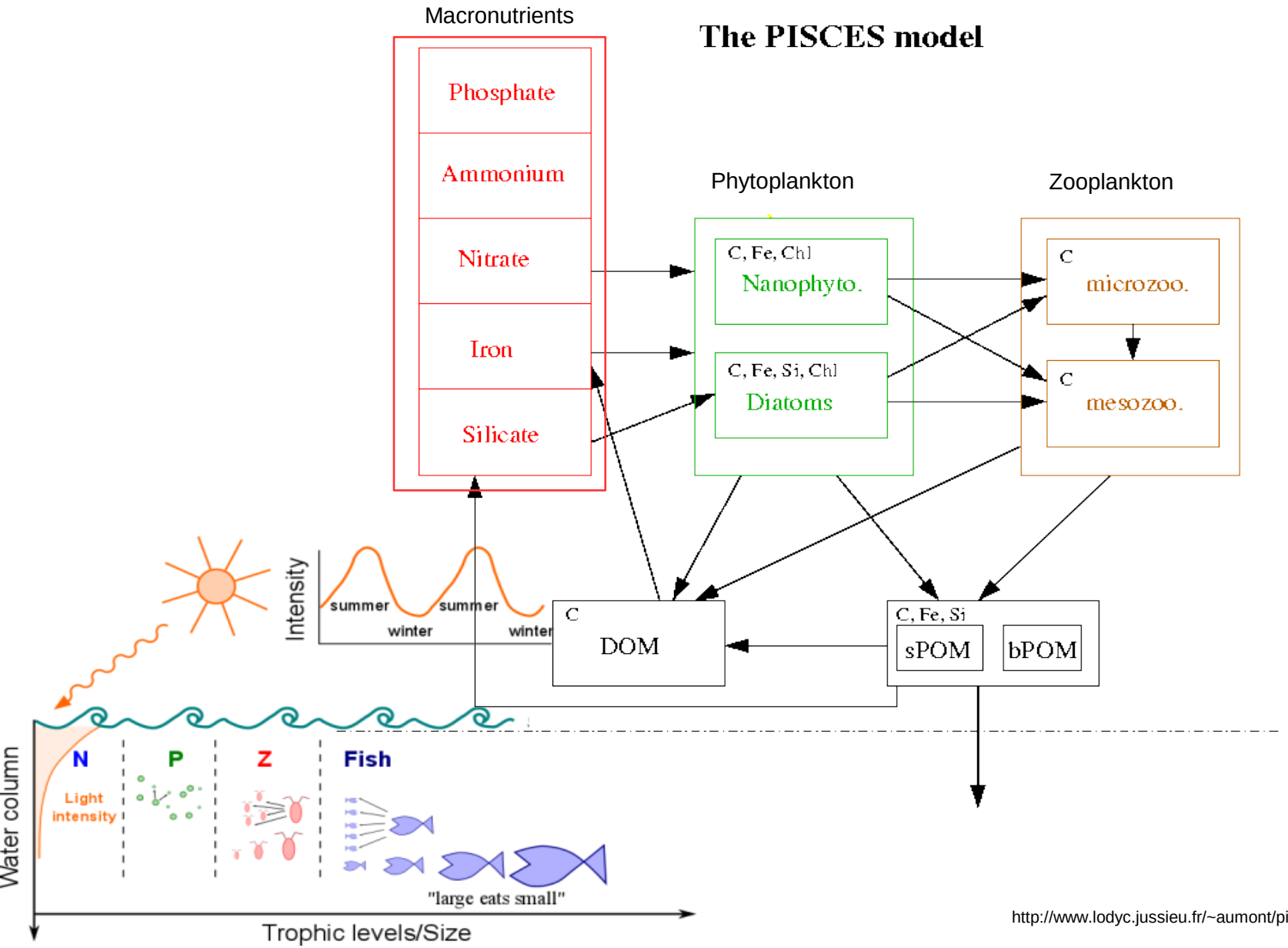
Marine food web



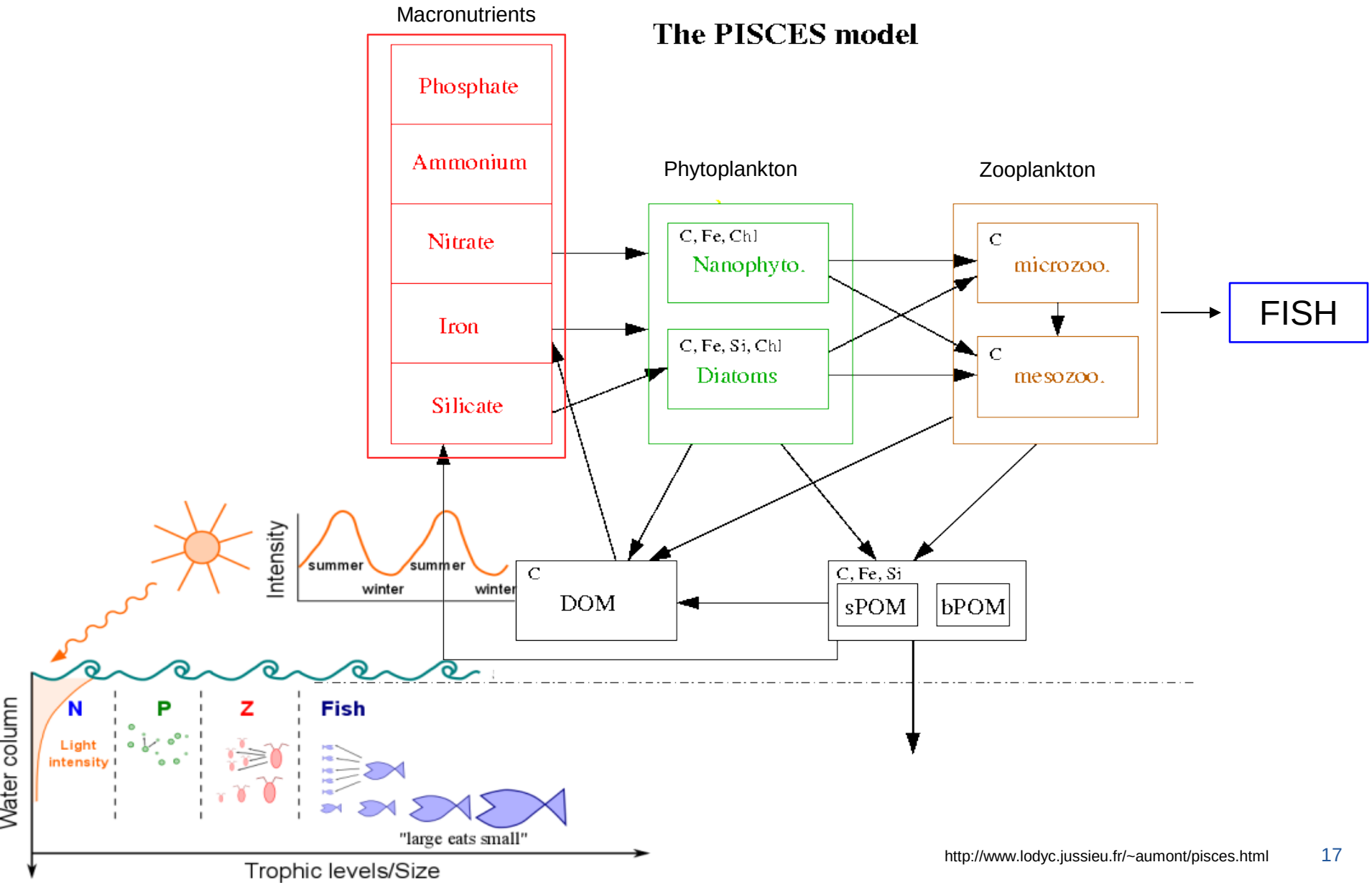


PISCES



http://www.lodyc.jussieu.fr/~aumont/pisces.html

PISCES



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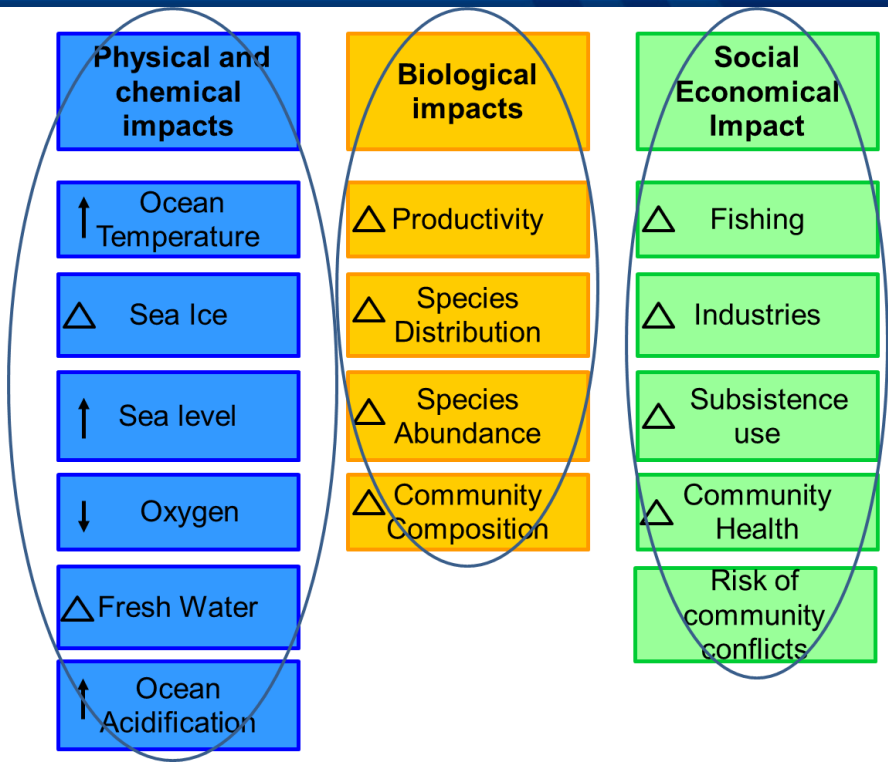
Feedback

Our experience in interacting with the wind energy, insurance and viticulture sectors has taught us that climate data is not climate information.



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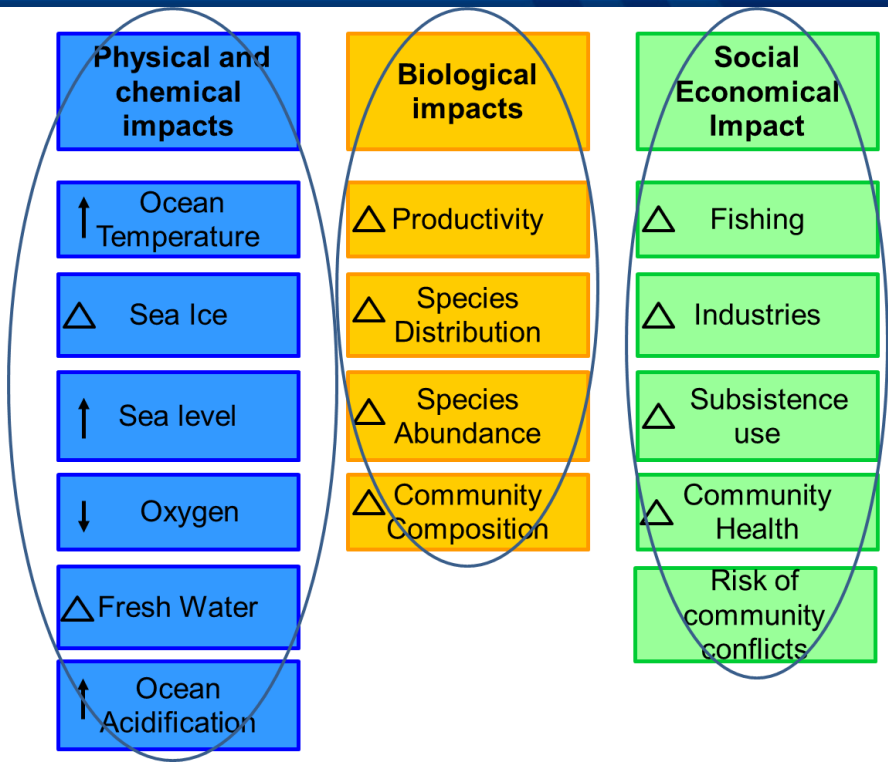

How can we interact?

- Which variables do you need?
- Are you interested in ocean temperature, currents, net primary productions?

Future plans

Workshop in Barcelona in Spring 2016:

- Better understanding of the need in terms of input for economical and biological models and evaluate the associated need for downscaling and bias correction.
- Explain to the biological and economical community the climate jargon (projection vs prediction, skill, reliability, bias correction).
- Define a work plan for data exchange.

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Thank you!

For further information please contact
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